Operating Instructions

Digital Heating/Cooling Thermostat

Model **300-206**

Robertshaw®

Your new Robertshaw thermostat has been designed to provide accurate control and display of the room temperature. In addition, it will also display all relevant information pertaining to your system.

The clearly marked buttons and informative display make it extremely easy to understand and simple to use.

Please take a few moments to read the brief instructions and familiarize yourself with the various functions in order to obtain maximum benefit from this truly unique electronic control.

GENERAL INFORMATION

The thermostat normally displays room temperature, mode of operation and whether cooling or heating is currently on. The six buttons on the front of the unit allow complete control of your equipment.

You may select different heating and cooling setpoints for the system to maintain, e.g., 70° in heating and 75° in cooling. Raising or lowering the setpoints in heating or cooling is as simple as pushing a button. In addition, you may choose to display the temperature in °F or °C.

The thermostat also allows you to select continuous fan operation (useful when using an air cleaner) or have the fan come on with the equipment.

BUTTON FUNCTIONS

Outdoor	Press to display the outdoor temperature (optional)
Mode	Press to select cool only, heat only, auto (cool and heat) or off
Fan	Press for continuous fan or auto fan
Day/Night	Press to alternate between day and night temperature setpoints

USER CONTROLS

MODE

Select the desired mode of operation by repeatedly pressing the MODE button.

COOLING ❄

Controls the cooling system only. Select the temperature you want while in the cooling mode by pressing and holding the ▲ or ▼ buttons. The word COOL and the temperature setting is displayed for 5 seconds.

HEATING

Controls the heating system only. Select the temperature you want while in the heating mode by pressing and holding the ▲ or ▼ buttons. The word HEAT and the temperature setting is displayed for 5 seconds.

FAN

The fan will come on automatically when the system is operating. To select continuous fan operation, press the FAN button and the display will show . This is recommended for electronic air cleaners and continuous ventilation requirements.

OFF

To turn off the heating or cooling system, press the MODE button until the word OFF appears on the LCD. **Avoid** using the OFF mode during extremely cold weather to prevent damage to the equipment from freezing.

USER CONTROLS (cont)

LIMITED OVERRIDE

When the keyboard is locked (switch #2 LOCKED), the user may override the temperature setpoint for 1 hour by pressing either the ▼ or ▲ button. The range of temperature override is ± 3° F or ± 3° C from the programmed daytime setpoint.

OUTDOOR BUTTON

If your thermostat has been installed with an electronic outdoor remote sensor (Uni-Line Part #529), you may view the outdoor temperature simply by pressing the OUTDOOR button. Upon releasing the button, the thermostat will once again display the indoor temperature. If the option is not connected, the thermostat will display ---.

DAY/NIGHT BUTTON ☼☾

When the thermostat is installed initially, the display will show the ☼ symbol for your day temperature. By pressing the DAY/NIGHT button you may select an alternate setback or night ☾ temperature (the thermostat will remember this setpoint). Simply press the DAY/NIGHT button to alternate between temperature settings.

CELSIUS / FAHRENHEIT

Simultaneously press ▲ and ▼ to switch between Celsius (C) and Fahrenheit (F) temperature display.

REMOTE SENSOR (OPTION) RS1 – RS2 – RS+V

The thermostat is designed to accept the electronic remote sensor (Uni-Line Part #528) which will allow you to locate your thermostat in an area away from view.

CLOCK TERMINALS (OPTION) CLK1 – CLK2

Your thermostat is equipped with remote clock terminals. By connecting a remote clock timer, the thermostat can be alternated between the day and night (setback) temperature setpoints automatically.

TEMPERATURE ACCURACY

Full temperature accuracy will only be realized after the thermostat has been installed and powered for at least one (1) hour.

POWER FAILURES

Your thermostat employs the latest in solid state electronic technology.

One of the unique features of your thermostat is that no battery is required to maintain your selected setpoints in the event of a power loss as the memory is unaffected by power failures of any duration.

When power is restored, the thermostat will continue operating as if the power had never been off.

INSTALLATION INSTRUCTIONS

CAUTION

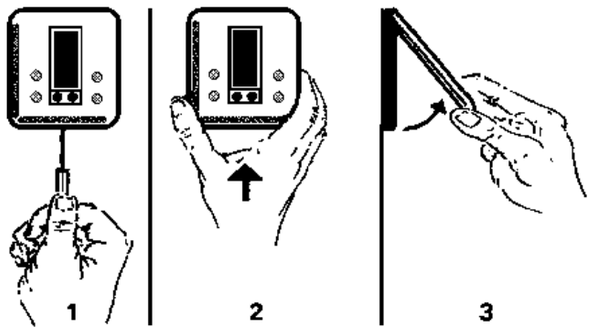
THIS DEVICE SHOULD BE INSTALLED BY A QUALIFIED TECHNICIAN WITH DUE REGARD FOR SAFETY, AS IMPROPER INSTALLATION COULD RESULT IN A HAZARDOUS CONDITION

LOCATION

To ensure proper operation, the thermostat should be mounted on an inside wall in a frequently occupied area of the building. In addition, its position must be at least 18" (46cm) from any outside wall, and approximately 5' (1.5m) above the floor in a location with freely circulating air of an average temperature. You should avoid the following locations:

– behind doors or in corners where freely circulating air is unavailable;
– where direct sunlight or radiant heat from appliances might affect control operation;
– on an outside wall;
– adjacent to, or in line with, conditioned air discharge grilles, stairwells, or outside doors;
– where its operation may be affected by steam or water pipes or warm air stacks in an adjacent partition space, or by an area behind the thermostat which is not climate controlled;
– where its operation will be affected by the supply air of an adjacent climate control HVAC device; and
– near sources of electrical interference such as arcing relay contacts

REMOVING THE THERMOSTAT FROM THE SUBBASE



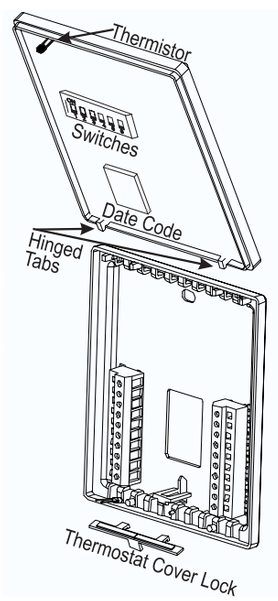
1. Insert a flat blade screwdriver or coin 1/8" into the slot located in the bottom center of the thermostat case and twist 1/4 turn. When you feel or hear a click, grasp the case from the bottom two corners and separate from the subbase. *Some models require more force than others when separating due to the number of terminals used.*
2. Swing the thermostat out from the bottom.
3. Lift the thermostat up and off the subbase.
4. Place the rectangular opening in the subbase over the equipment control wires protruding from the wall and, using the subbase as a template, mark the location of the two mounting holes (exact vertical mounting is necessary only for appearance).
5. Use the supplied anchors and screws for mounting on drywall or plaster; drill two 3/16" (5mm) diameter holes at the marked locations; use a hammer to tap the nylon anchors in flush to the wall surface and fasten subbase using the supplied screws. (Do not over-tighten!)
6. Connect the wires from your system to the thermostat terminals. Carefully dress the wires so that any excess is pushed back into the wall cavity or junction box. Ensure that the wires are flush to the plastic subbase. The access hole should be sealed or stuffed to prevent drafts from the wall affecting the thermostat.
7. Before the thermostat is reinstalled on the subbase, install the optional clock/timer, indoor remote sensor and outdoor remote sensor, if used. Refer to the installation instructions supplied with each option. Also check the position of the DIP switches on the back of the thermostat.

REPLACING THE THERMOSTAT ON SUBBASE

1. Position the thermostat on the hinged tabs at the top of the subbase.
2. Gently swing the thermostat down and press on the bottom center until it snaps into place.

THERMOSTAT COVER LOCK

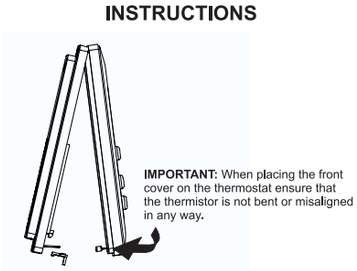
You may lock the cover down to prevent unauthorized access to the thermostat by adding the plastic lock (included in the installation bag). Insert the plastic lock piece into the bottom of the mounted base. The ends of the lock piece fit snugly under the lock pins extending from the bottom of the mounted base. The tab in the middle of the lock piece extends down from the base. To release the locking mechanism, press the lock piece up and into the base while gently prying open.

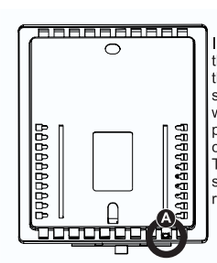


THERMISTOR MOUNTING INSTRUCTIONS

When placing the front cover on the thermostat ensure the thermistor is not bent or misaligned.
Ensure that the thermistor does not touch the thermostat case.
The thermistor should be placed horizontal to the wall. Ensure the thermistor is not pushed upward into the case.
The thermistor should be aligned so it is visible between the ribs on the bottom of the subbase.

THERMISTOR MOUNTING INSTRUCTIONS


IMPORTANT: When placing the front cover on the thermostat ensure that the thermistor is not bent or misaligned in any way.



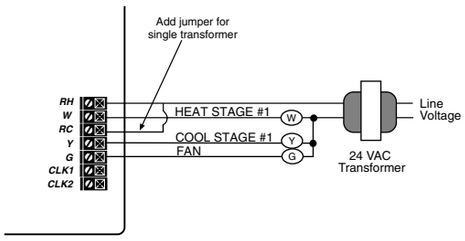
DETAIL A

IMPORTANT: Ensure that the thermistor does not touch the thermostat case. The thermistor should be placed horizontal to the wall. Ensure the thermistor is not pushed upward into the thermostat case.
The thermistor should be aligned such that it is visible between the ribs on the bottom of the backplate.

(Outside rear view with backplate closed)

WIRING DIAGRAMS

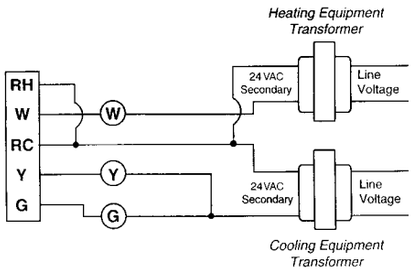
SINGLE TRANSFORMER



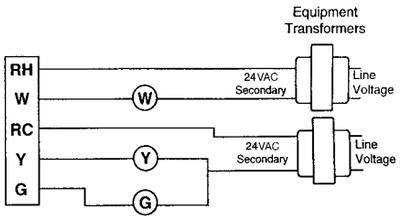
TWO TRANSFORMERS

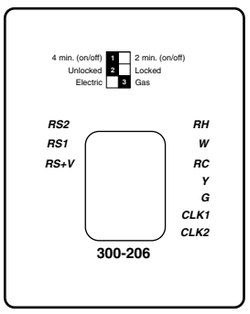
If the fault indicator is ON, the transformers are OUT OF PHASE. Switch the secondary wires of one of the transformers (NOT BOTH) and ensure the red light goes OFF.

Single RH/RC Wire



Separate RH and RC Wires





TERMINAL DESIGNATIONS

RH .....24 VAC from heating equipment transformer
W..... Energizes the heating equipment with a call for heating
RC .....24 VAC from cooling equipment transformer
Y..... Energizes the cooling equipment with a call for cooling
G..... Energizes the fan circuit
CLK1 ..... Independent remote clock/timer optional for
CLK2 alternate setpoints
RS2..... Use to connect remote temperature sensor(s).
RS1 Refer to the instructions included
RS+V with the sensors.

DIP SWITCH OPTIONS

Located on the back of the thermostat once the subbase is removed.

Switch #1 – Allows for a 4-minute or 2-minute minimum on/off time.

Switch #2 – Allows for the keypad to be locked or unlocked.

Switch #3 – Allows for an immediate fan (electric heat) or a natural delay for the fan (gas/oil heat).

SPECIFICATIONS

Rated Voltage	20-30 VAC, 24 nominal
Rated A.C. Current	0.08 Amps to 1.5 Amps continuous per output with surges to 4 Amps max.
Control Range	Heating: 38° to 88°F in 1° Steps 5° to 30°C in 1° Steps Cooling: 60° to 108°F in 1° Steps 16° to 40°C in 1° Steps
Thermostat Measurement Range	28° to 124°F or 0° to 48°C
O.D.T. Displayed Range	-50° to 124°F or -48° to 48°C
Control Accuracy	±0.5°C at 20°C, ±1°F at 68°F
Minimum Deadband	(between heating and cooling) 2°F or 1°C